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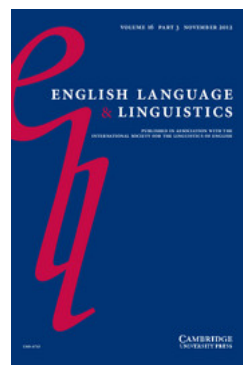
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The morphology of *-ly* and the categorial status of ‘adverbs’ in English¹

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I argue in this article that adverb-forming *-ly*, unlike its adjective-forming counterpart, is an inflectional suffix, that therefore adverbs containing *-ly* are inflected adjectives and that, consequently, adverbs not containing *-ly* are uninflected adjectives. I demonstrate that in English, the traditional category Adverb is morphologically non-distinct from the category Adjective in that it has no morphology of its own but instead shares all relevant aspects of the morphology of adjectives. I demonstrate moreover that such an analysis explains various aspects of morphological and phonological behaviour on the part of adverbial *-ly* which differ from the behaviour of adjectival *-ly* and/or from the behaviour of derivational suffixes. And I argue that contrary to a recent claim, the syntactic behaviour of adverbs presents no obstacle to the single-category analysis of adjectives and adverbs warranted by the morphology.

1 Introduction

1.1 *The problem*

In English, suffixes of the form *-ly* figure in two – perhaps three – morphological processes: in the formation of de-adjectival adverbs, of de-nominal adjectives as well as (now unproductively: Marchand 1969: 330) of a small number of de-adjectival adjectives. Examples of each are given in (1a, b, c) respectively.

- | | | | | | |
|---------|---------------|-----|-------------|-----|--------|
| (1) (a) | nicely | (b) | manly | (c) | kindly |
| | slowly | | bodily | | deadly |
| | stupidly | | friendly | | lively |
| | consistently | | neighbourly | | sickly |
| | interestingly | | daily | | poorly |

Although superficially similar and historically closely related (see, for example, Pounder 2001), the different processes involving *-ly* show some striking differences in behaviour. While any adjective-forming *-ly* can occur before other derivational suffixes (*manliness*, *neighbourliness*; *deadliness*, *livelihood*), adverb-forming *-ly* cannot occur in such contexts: **niceliness*, **slowness*. In contrast, adverbs not formed with *-ly* do

¹ This article is at least in part a response to Payne, Huddleston & Pullum (2010). Indeed, it probably owes its very existence to conversations with my departmental colleague Geoff Pullum, whose disagreement I gratefully and cheerfully acknowledge. Heike Baeskow, Nik Gisborne, Tracy Hall, S. J. Hannahs, Donka Minkova, Ingo Plag, Hans-Jörg Schmid, Greg Stump and two anonymous reviewers have also provided helpful comments and suggestions.

occasionally undergo morphological derivation: *soonish*, *seldomness*, etc. It seems to be the adverb-forming suffix, not the adverb status as such, of forms such as *nicely*, *slowly* that bars further derivation.

Moreover, while any adjectival *-ly* can be followed by inflectional suffixes (*manlier*, *deadliest*, etc.), adverbial *-ly* again cannot occur in such contexts: **nicelier*, **slowliest*. Such forms are amenable to periphrastic gradation only: *more nicely*, *most slowly*. Again it seems to be the suffix, not the lexeme's adverb status, which prevents inflectional gradation: some adverbs without *-ly* are capable of inflectional gradation, regardless of whether they have adjectival homonyms (*earlier*, *faster*) or not (*sooner*, *soonest*).

I will in this article subscribe to the claim that in English 'adverb' is not a lexical category but merely a specific modifier function performed by members of the category Adjective, associated with contexts other than those traditionally associated with adjectives. This 'single-category claim' might be taken to imply that the de-adjectival versions of adjective-forming and adverb-forming *-ly*, exemplified in (1c) and (1a) respectively, constitute the same derivational suffix. *Deadly* and *nicely* would then have identical morphological structures, and would differ merely in terms of their syntactic distributions. But such an analysis, however attractive at first glance, would be unable to account for the unusual behaviour of adverbial *-ly* which I noted above: adjectival *-ly* fails to share this behaviour. At any rate, contrary to what Baker (2003: 231) suggests, the single-category claim could not possibly be based on, or substantiated by, the observation that adjective-forming and adverb-forming *-ly* are of identical form. Such an observation is of diachronic interest only: similarity of form does not indicate synchronic relatedness any more than historical relatedness does.

Compare, for example, the two suffixes of the form *-al* found in English. Noun-forming *-al* (*arrival*, *referral*, *withdrawal*) attaches to end-stressed verbal bases only, but is itself stress-neutral, while adjective-forming *-al*, attaching to Latinate roots of which many also function as nouns, does not have such a restriction on its input selection but is itself 'stress-shifting': *matern-* – *maternal*, *pivot* – *pivotal*, *accident* – *accidental* (Marchand 1969: 236ff.; Giegerich 1999: 54ff., 113f.). English simply has two derivational suffixes which share the form *-al*; they are associated with different derivational processes and give rise to different lexical category membership.

However, merely asserting that similarly the two *-ly* suffixes are associated with different derivational processes would fare no better than the single-category claim alone does in explaining the unusual behaviour of adverb-forming *-ly*. I will therefore argue, in addition to subscribing to the single-category claim, that adjectival and adverbial *-ly* are in terms of the morphological system of English radically different suffixes: the former is a derivational suffix while the latter is inflectional. In *deadly*, the suffix is derivational but non-category-changing (like, for example, *-ish* in *greenish*); but *nicely* is an inflected form of the adjective *nice*. I will demonstrate how such an analysis finds it easy to explain the various aspects of strange behaviour on the part of adverbial *-ly*, while under the traditional, derivational analysis of adverbial *-ly*, which as we saw may or may not treat adjectives and adverbs as categorially distinct, such behaviour defies explanation. The 'inflected-adjective claim' then entails the

single-category claim (but not *vice versa*): if adverbial *-ly* is inflectional then adverbs cannot be categorially distinct from adjectives.

It follows from the two related claims made here that lexemes performing the 'adverb' function which do not end in the suffix *-ly* (for example, *soon*, *seldom*, *early*, *fast*, etc.) must be regarded as uninflected adjectives, which differ from traditional adjectives merely in terms of their distribution. I will demonstrate that, again, this analysis is advantageous in that, unlike its more traditional alternative, it explains the morphological behaviour of such lexemes.

1.2 The research background

The single-category claim for adverbial *-ly* is not altogether new; it has been made on syntactic grounds for example by Lyons (1966), Emonds (1976), Bybee (1985), Radford (1988) and Baker (2003), all of whom base their argumentation on the complementary distribution of adjectives and adverbs: adjective phrases function as predicates or as modifiers in the noun phrase; adverb phrases can be modifiers elsewhere. I return to this issue in section 5 below, where I discuss the counterarguments to that position put forward by Payne *et al.* (2010).

The inflected-adjective claim derives some support from the syntactic single-category claim (without following from it, as we saw above) in that the complementary distribution of adjectives and adverbs enables not only the distribution of adverbs, but thereby also that of adverbial *-ly*, to be treated as conditioned by the syntax. In morphological theories which make a systematic distinction between derivation and inflection, this is one criterion of several for inflectional status. Where inflection is further divided into 'inherent inflection' and 'contextual inflection' (Booij 1996), adverbial *-ly* would belong with the latter.

Of course, further criteria have to be invoked to determine whether a given suffix is inflectional or derivational. Thus Hockett (1958: 210) observed that adverbial *-ly* and suffixal gradation are mutually exclusive (**quicklier*, **quickerly*). Given that suffixal gradation is held to be inflectional (for discussion see Stephany 1982; Zwicky 1989, 1995), *-ly* belongs to the same paradigm, and is therefore itself inflectional.

Sugioka & Lehr (1983) make the inflected-adjective claim mainly on the grounds that adverbial *-ly* does not attach to adverbs where those are the first elements of compounds (*widespread*, *fresh frozen*), a feature shared by all regular inflection. (For discussion see Zwicky 1995.) I deal with this point in more detail in section 3.1 below.

Sugioka & Lehr (1983) also argue that the dialect-specific absence of *-ly*, for example in *John ate quick*, supports the inflected-adjective claim – for discussion see again Zwicky (1995). I deal with this point in section 3.2 below. Plag (2003), finally, regards the transparency and productivity of adverbial *-ly* as indicative of its inflectional status – another criterion that will deserve further discussion, provided below in section 3.3.

On the balance of the arguments known to them, both Zwicky (1995) and Payne *et al.* (2010) come down on the side of the traditional position which affords adverbs

categorial distinctness from adjectives and treats all *-ly* as derivational. I will argue in the following sections that the morphological system of English itself, as well as among other things the morphological behaviour of underived adverbs, provides important, but hitherto overlooked, additional arguments for the inflectional analysis of *-ly*, so that – again, on balance – that analysis is to be preferred.²

2 ‘Adverbs’ and the organisation of the morphology

I argue in this section that an inflectional treatment of adverbial *-ly* is consistent with the morphological system’s general architecture while a derivational treatment is not. Under an analysis which recognises Adverb as a lexical category, the behaviour of *-ly* would mask central aspects of that architecture and thereby inhibit generalisations about it; and neither the adjective-like morphological behaviour of underived adverbs nor the inflection-like behaviour of adverbial *-ly* would have synchronic explanations.

2.1 *Nouns, verbs and adjectives, but not adverbs, freely derive from each other*

In the derivational morphology of English, the three lexical categories Noun, Verb and Adjective freely interact with each other. Nouns can be derived from both verbs and adjectives; verbs can be derived from adjectives and nouns; and adjectives in turn can be derived from nouns and verbs. Some examples are given in (2); the exhaustive descriptive account given by Marchand (1969) gives many more.

- | | |
|--------------------------|---------------------------|
| (2) (a) de-verbal nouns | (b) de-adjectival nouns |
| driver | strangeness |
| approval | radicalism |
| development | sincerity |
| (c) de-nominal verbs | (d) de-adjectival verbs |
| victimise | blacken |
| beautify | enlarge |
| hyphenate | nationalise |
| (e) de-verbal adjectives | (f) de-nominal adjectives |
| drinkable | joyful |
| speculative | meaningless |
| repellent | foolish |

Not all the derivational processes behind the complex lexemes listed in (2) are fully productive in Present-day English; but the productivity of derivational processes is not at issue here. The point is that between any two of the three categories Adjective, Noun and Verb there exist synchronically analysable two-way derivational relationships, to which a number of conversion processes may be added for completeness.

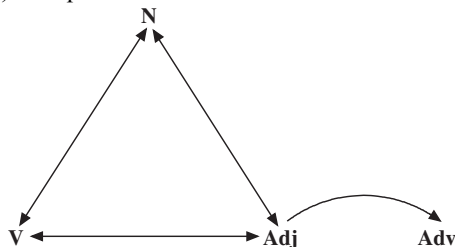
² Intriguingly, the inflected-adjective claim appears to be tacitly shared by Marchand (1969), who gives a detailed account of adjective-forming *-ly* (pp. 329ff.) but makes no mention at all of the suffix’s adverb-forming function. (Similarly Hansen *et al.* 1990.)

In contrast, when adverbs are derived from members of other lexical categories then the suffix involved is always *-ly*, and the other lexical category involved is always that of Adjective ((1a) above). No adverbs derive from verbs or nouns.

Moreover, recall from section 1 that adjectival *-ly* can be followed by other derivational suffixes but adverbial *-ly* cannot: *manliness* vs **slowliness*, **niceliness*. Given also that morphologically complex adverbs such as *unpleasantly* can be uncontroversially analysed as *[[unpleasant]ly]* rather than *[un[pleasantly]]*, we can make the general observation that *-ly* adverbs cannot be affixation bases in the derivational morphology: nothing can be derived from them.

There are some other suffixes in the derivational morphology of English which, without major consequences for the morphological system, behave in this somewhat exceptional way: for example, *-ism* and *-ity* (Fabb 1988; Hay & Plag 2004). But the specific fact that adverbial *-ly* is a derivational dead-end does have consequences for the morphological system as a whole: given the exclusive role of *-ly* in the formation of adverbs, it effectively isolates the putative category Adverb in the system. The derivational paths available in the morphology of English can then be schematically represented as in (3), where adverbial *-ly* is treated as derivational and Adverb as a lexical category.

(3) The place of adverbs in the derivational morphology³



I noted in section 1 the occasional occurrence of derivatives from morphologically simple adverbs: *soonish*, *seldomness*, *soonness*, *unseldom*, and probably more, are attested. Payne *et al.* (2010: 63) cite the existence of such de-adverbial derivatives as support for the categorial integrity of adverbs, not noting, however, that the derivational affixes involved – *-ish*, *-ness*, *un-* – are all primarily and productively associated with de-adjectival processes. *Greenish*, *kindness*, *unkind* would serve as more typical examples of the processes involved than occasional adverb derivatives like *soonish*.

It might be argued that derivational suffixes such as those involved here are already known to sporadically attach to members of other categories (*eightish*, *oneness*, *unease*), and that therefore Adverb is just another category that such suffixes stray onto. But this would amount to giving *soonish* etc. an equally sporadic status, which in turn would miss a larger picture: the connection of all such ‘de-adverbial’ derivatives specifically with the de-adjectival morphology. Underived adverbs simply do not take suffixes that

³ A similar diagram, figuring, however, in an argument unrelated to this article’s topic, appears in Schmid (2011: 180).

are not predominantly de-adjectival. The derivational behaviour of underived adverbs supports the claim, then, that ‘adverbs’ are members of the category Adjective. English has no derivational processes which could be specifically called ‘de-adverbial’, just as it has no morphological processes specifically associated with minor categories such as Determiner, Preposition, etc.

These observations strongly support the single-category claim. There is in English a triangle of lexical categories – Noun, Verb and Adjective – within which the derivational morphology is conducted. If there is a category Adverb then the derivational morphology of that category is at best that of an appendix to the category Adjective. All derived adverbs have adjectival bases; underived adverbs behave morphologically like adjectives.

2.2 *Nouns, verbs and adjectives, but not adverbs, have distinct inflectional morphologies*

The set of three lexical categories – Noun, Verb and Adjective – is not only significant to the derivational morphology; it figures similarly in the inflectional system. If we assume with most of the literature that morphological gradation (*kinder, kindest*) is inflectional (Stephany 1982; Zwicky 1989), for example because certain syntactic contexts require comparative forms – *X is _____ than Y* – then the three lexical categories Noun, Verb and Adjective, and only these, have regular inflectional morphology.

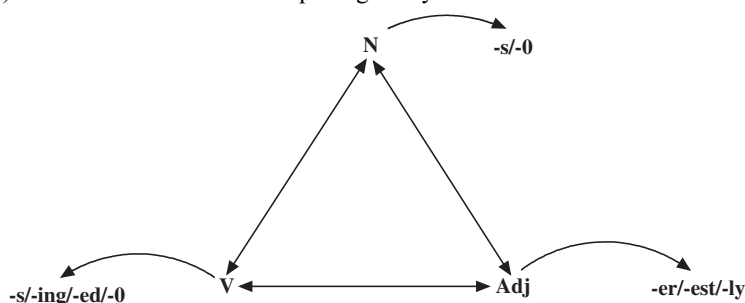
We saw in section 1 that *-ly* adverbs reject inflectional suffixes – recall **nicelier, *slowliest*, which are ill-formed while their adjectival counterparts (*manlier, deadliest*) are grammatical. They reject plural (**nicelies*) and the inflectional morphology associated with verbs as well, of course. Underived adverbs may inflect for grade, just like adjectives, regardless of whether they have adjectival homonyms or not: *sooner, soonest, faster, earliest*. It may be observed here that gradation is not otherwise strictly confined to adjectives, but may occur, for example, with prepositions which have adjectival homonyms (*close, near, far* – Pullum & Huddleston 2002b: 609), but that does not invalidate the main point connected with the gradability of underived adverbs. The main point is that the traditional category Adverb again stands apart from the other three lexical categories. It has no inflectional morphology of its own, just as it has no derivational morphology of its own. When adverbs do inflect they behave as though they were adjectives.

This aspect of adjective-like behaviour is particularly compelling in the case of *well*. Where this is an adjective as in *a well man*, regular gradation is available as expected: *the wellest man in the world*. In contrast, *well* as the underived adverb corresponding to adjectival *good* does not grade as **weller, *weldest*, as one might expect after the model of other underived adverbs such as *soon* (*sooner, soonest*). It goes instead with the irregular gradation of the corresponding adjective, such that *better, best* are the irregular graded forms of both *good* and adverbial *well*. This observation strongly suggests that there is a paradigmatic relationship between *good* and adverbial *well* (from which adjectival *well* is excluded): if these two were paradigmatically as unrelated as

they are in formal morphological terms then adverbial *well* would be expected to grade *weller*, *wellest*, like adjectival *well*. More generally, this observation supports the claim that graded adverbs such as *faster*, *earlier*, etc. are not just homonymous with graded adjectives where such homonyms are available, but that they in fact *are* graded adjectives: again, without such a claim, the fact that *well* shares the paradigm of *good*, although that paradigm is itself highly irregular and therefore not of default status, has to be regarded as a strange synchronic coincidence.

The complete picture of morphological pathways is given in (4), now including inflection. Recalling Hockett (1958) from section 1.2, notice how the 'Adv' pathway of (3) above (occupied by adverbial *-ly*) can be conflated with that of *-er/-est*. These observations again support the single-category claim, as well as at least lending plausibility to the inflected-adjective claim for *-ly* adverbs.

(4) The architecture of the morphological system:



In summary, the traditional analysis, defended by Zwicky (1995) and Payne *et al.* (2010), which accords adverbs lexical category status on a par with the other three, masks important generalisations about the morphological system of English and about the behaviour of its members. Only members of lexical categories are part of the morphological system; and adverbs are clearly not integrated in that system. They have neither a derivational nor an inflectional morphology of their own. Moreover, when adverbs in any way appear to undergo morphological processes – derivational or inflectional – then these processes are always of the kind primarily associated with adjectives, even where those are themselves irregular (*better*, *best*). An adjectival analysis accounts for the adjectival morphological behaviour of underived adverbs: these behave like adjectives simply because they *are* adjectives. It equally accounts for the odd behaviour of *-ly*-derived 'adverbs' within the morphological system. These are not derived but inflected; and given their adjectival bases, they must be inflected adjectives.

The lexical categories of English are, then, Noun, Verb and Adjective. The category Adjective makes an inflectional distinction between the traditional 'adjectival' and 'adverbial' functions, which is, however, suspended in the comparative and superlative grades, similarly to the way in which, for example, the verbal inflection does not express person distinctions in the past tense.

I will, in the remainder of this article, discuss further aspects of the behaviour of 'adverb-forming' *-ly*, and show that those either support, or are consistent with,

an inflectional analysis of this suffix. This will, perhaps unexpectedly, involve not only morphological and syntactic behaviour but also phonological behaviour. A brief discussion of the syntactic behaviour of adverbs and why that behaviour again supports, or is consistent with, an inflectional analysis of adverbial *-ly* will conclude the article.

3 Further morphological aspects of the inflection-like behaviour of adverbial *-ly*

3.1 *Confinement to the margins of lexemes*

Adverbs formed with *-ly* cannot undergo morphological derivation, while underived adverbs as well as adjectives formed with *-ly* can: recall **niceliness* vs *soonness* and *manliness*. Adverb-forming *-ly* also cannot be followed by inflectional suffixes: recall **nicelier*, **slowliest* (and again contrast non-*-ly* adverbs and non-adverbial *-ly*: *sooner* and *manlier*). If adverbial *-ly* were a derivational suffix then it would be the only such suffix in English to be confined to the absolutely lexeme-final position: all other derivational suffixes can be followed by inflectional and/or other derivational suffixes.

But if adverbial *-ly* is treated as inflectional then this fact forms part of the much larger, though not uncontroversial, generalisation whereby regular inflection cannot occur inside lexemes but is confined to their margins (Kiparsky 1982; Rainer 1996; Cetnarowska 2001). Thus, **eventsful*, **peersless*, **watches-maker*, **rats-infested* are ill-formed despite the fact that the embedded plural forms may be semantically warranted, while lexemes containing irregular inflection, such as *headlice-repellent*, *mice-infested*, are well-formed. Similarly, and supporting the separate claim that adjectival gradation is inflectional, irregularly graded adjectives are occasionally found inside derivatives while regularly graded adjectives again cannot occur there: *to better*, *to further*, *to lessen*, *to worsen*; *betterment*, *furtherance*, etc. vs **to nicer*, **tallerment*, **richerance*, etc.

Sugioka & Lehr (1983), among the first to defend the inflected-adjective claim on morphological grounds, rely heavily on this positional constraint on regular inflection. They adduce two construction types in support of their claim, both of which they regard as compounds and neither of which can contain *-ly* adverbs as first elements. I will argue here that one of these is not actually of compound status, and hence is irrelevant, but that the other is relevant and that there is also a third one.

The first construction adduced by Sugioka & Lehr (1983) is exemplified in (5):

- (5) beautiful dancer
 quick thinker
 fast mover
 heavy smoker

Each of these is ambiguous, such that a beautiful dancer can be a beautiful person who is a dancer or someone who dances beautifully (but may be of unattractive appearance). The latter version Sugioka & Lehr regard as a compound lexeme, presumably because it has a superficial similarity to synthetic compounds such as *watch-maker*: in both

cases, the first element appears to be a dependent of a verb embedded in the second. The dependents in (5) should therefore under the latter reading be regarded as adverbs, which in that compound-medial position cannot carry their normal inflectional suffix. But this analysis is wrong on two counts.

Firstly, as also noted by Zwicky (1995), forms such as those in (5) are not in fact compound lexemes under either reading: their elements are freely available to syntactic operations such as pro-*one* and individual modification without losing the reading which Sugioka & Lehr associate with the 'compound' version:

- (6) a very beautiful but sometimes over-confident dancer
a rather slow thinker and an amazingly quick one
an at times very heavy but surprisingly intermittent smoker

Secondly, in more recent discussion such forms have been viewed as instances of an ambiguity between intersective and subsecutive modification, such that *beautiful* may modify all or merely a subset of the head's semantic elements ('qualia' in the sense of Pustejovsky 1995; see also Jackendoff 1997, Bouchard 2002). Since the same ambiguity is also found with heads which are not de-verbal (*good chef*, *efficient nurse*), subsecutive modification is clearly a semantic issue only. It therefore cannot provide a syntactic context in which one might argue that adjectives function as adverbs (while lacking the inflection expected in that context). They are simply adjectives pre-modifying nouns in either reading.

Sugioka & Lehr's (1983) second set of examples are of this form:

- (7) widespread
fresh-frozen
quick-dissolving
slow-burning
free-moving

Such forms may be paralleled by adjective phrases such as *quickly dissolving*, *slowly burning*, etc. It is possible to buy slow-burning coal (not ablaze at the time of purchase), but slowly burning coal can only be found in a fire. It is therefore reasonable to say that forms such as those in (7) are lexical, perhaps lexicalised over time, and hence compound adjectives rather than adjective phrases. This is exactly the same lexicalisation pattern as that which gives rise to the parallelism of noun phrases and compound nouns: *white house* vs *White-House*, etc. (Giegerich 2008). There is no independent reason to distinguish between an adverb in *slowly burning* and an adjective in its compound counterpart *slow-burning*; and there is also no explanation why an adverb should lose its derivational suffix when it is embedded in a compound. Under an inflectional analysis, on the other hand, *-ly* is absent here simply due to the known ban on regular inflection inside complex lexemes. Note again that uninflected 'adverbs' can occur inside compounds just as irregular plurals can: *well-formed*, *well-spoken*.⁴

⁴ Forms such as *widely-held*, *newly-formed*, *privately-owned*, pointed out by a reviewer of this article, are here regarded as phrasal despite the common practice of hyphenating them in attributive position.

The third set of relevant cases was noted by Payne *et al.* (2010: 53f.), who, however, regarded them as examples of the parallel distribution of pre-modifying adjectives and adverbs within adjective phrases, and therefore as counterevidence to the single-category claim. The examples in (8) and their subdivision are Payne *et al.*'s:

- | | |
|---|--|
| (8) (a) blind drunk
cold sober
plain daft
squeaky clean
filthy rich | (b) mad keen
anal retentive
silky smooth
repetitive boring
traditional Irish |
|---|--|

In the examples in (8a) the modifiers have specialised meanings, usually denoting 'high degree' and contrasting, for example, with semantically transparent *blindly drunk*, *coldly sober*, etc. The non-compositional semantics of these examples again suggests lexicalised, that is, compound adjective status rather than the phrasal status which Payne *et al.* assume them to have. This in turn provides a ready explanation for the absence of *-ly*: these cases are on a par with those in (7) above.

The same may be said about some members of Payne *et al.*'s second subgroup, (8b) above. *Mad keen* should probably be in the former subgroup. *Anal retentive* can only be figurative and must therefore be lexical. (The transparent, medical-technical reading is only available to its phrasal counterpart *anally retentive*.) The other examples in (8b) may similarly be analysed as in some way lexicalised as recurrent collocations: their phrasal equivalents may be *silky smooth*, *repetitively boring*, etc., or, alternatively, *silky and smooth*, *repetitive and boring*, in which case their lexicalised equivalents in (8b) would be adjectival *dvandvas* (Bauer 2008). Either way, they are compounds and the absence of *-ly* is explained under an inflectional account of that suffix. Note that under the alternative, derivational analysis of *-ly* defended by Payne *et al.* (2010), cases such as those in (8) should still be regarded as compounds: the lexical nature of these forms is unrelated to the categorial status of their first elements. *Cold* and *coldly* in *cold sober* vs *coldly sober*, etc. are then not in fact in parallel distribution – the former is a compound and the latter a phrase – and therefore do not support Payne *et al.*'s position. I return to this point in section 5.

3.2 Restrictions on post-verbal *-ly* and pre-verbal non-*ly* adverbs

Several researchers (Sugioka & Lehr 1983; Zwicky 1995; Payne *et al.* 2010) have observed that in some dialects, adverbs functioning as post-modifiers in verb phrases may not have *-ly*: *You gotta eat it up quick or they'll grab it off you*. In such dialects the *-ly* is retained in other contexts: *You gotta quickly/*quick eat it up*. A derivational analysis of *-ly* adverbs finds it surprisingly difficult to account for this simple phenomenon: that analysis has to posit a presumably open class of dialect-specific zero-derived adverbs, whose distribution is restricted to that particular position, so that there would be the two distributionally distinct adverbs *quickly* and *quick* corresponding to the adjective *quick*. Under an inflectional analysis of adverbial *-ly*, this is simply another example

of the loss of inflection which has been going on in the language for about a thousand years.

A grammar which distinguishes categorially between adjectives and adverbs cannot, of course, simply call such forms adjectives: uninflected adverbs such as *soon*, *today*, etc. also occur in that position. But adjectives is exactly what they are: in *you're talking good*, what occurs is the uninflected adjective, rather than the irregularly inflected adjective *well* expected in other varieties of the language (except perhaps in one which has no *well* at all). This is not just a matter of *-ly* loss, then: a plausible account of the dialect-specific form of adverbs in this context has serious problems maintaining a category distinction between adjectives and adverbs when *quick*, *soon* and *good* are interchangeable.

Sugioka & Lehr (1983) and Zwicky (1995) note, moreover, that there is 'a surface constraint for all dialects which prohibits any "ly-less" adverb, including those which never take *-ly* such as *fast*, in the preverbal position: **he fast ate*' (Sugioka & Lehr 1983: 285). This constraint is not dialect-specific, and in fact it is not an exceptionless prohibition: *he soon ate*, *he seldom ate*. But apart from that it seems to be the mirror-image of the constraint just discussed: the pre-verb position usually requires *-ly*, while in some dialects the post-verb position rejects it. Under a derivational analysis of adverbial *-ly* we would have to say, in conflict with the Lexical Integrity Principle (Di Sciullo & Williams 1987), that derived adverbs can occur pre-verbally but some of the underived adverbs cannot. The inflectional analysis is again rather more straightforward. It simply requires more finely grained syntactic and lexical conditioning in the distribution of inflectional *-ly* and of certain uninflected 'adverbs', such that *fast*, *well*, *yesterday*, etc. have slightly different distributions from, for example, *soon*, *seldom*, *often*, *quickly*.

3.3 *Adjectives and 'adverbs': semantic and formal relationships*

I deal in this section with a number of minor observations regarding the behaviour of derived and underived 'adverbs' in relation to corresponding adjectives (where those exist). These observations will be at least consistent with, and in some cases supportive of, an inflectional analysis of adverbial *-ly*.

Listing some of the arguments in favour of an inflectional analysis of adverbial *-ly*, Plag (2003: 196) notes that this suffix is highly productive and always semantically transparent. I comment that such behaviour is indeed consistent with regular inflectional status, but of course not confined to such status: some derivational processes – for example, the formation of abstract nouns with *-ness* – are also highly productive and almost always fully transparent. Plag's transparency claim for *-ly* is in fact not quite correct: Pullum & Huddleston (2002a: 565) note that some adverbs, such as *barely*, *hardly*, *scarcely*, *lately*, *presently*, *shortly*, are not synonymous, in the way for example *quickly* is, with their unsuffixed adjectival counterparts. But the occasional lexicalisation of inflected forms is not uncommon: this is what has happened, for example, in *pluralia tantum* such as *scissors*, *trousers*, *Arts*, etc. *Exceedingly* similarly lacks transparency, with the added problem of (unlike *interestingly*, for example) being

based not on an adjective but on the present participle of a transitive verb. Again, such irregularity has parallels elsewhere in the system: *news*, etc.

Another, related point made by Plag is that adverbial *-ly* encodes no lexical meaning. It has this in common with other inflectional suffixes; but again I comment that this is a property also found occasionally among derivational suffixes: Levi (1978), Warren (1984), Leitzke (1989) and others have argued, for example, that suffixes which derive associative ('relational') adjectives such as *autumnal*, *neighbourly* from nouns are semantically empty. Notice the synonymy of *autumnal equinox* and *autumn equinox*. The semantics and productivity of adverbial *-ly* is, then, fully consistent with an inflectional analysis but not strongly supportive of such an analysis.

Consider now the possible formal relationships between adverbs and, where those exist, cognate adjectives. The question is again whether those are consistent with an analysis which regards such relationships as inflectional, or whether they confront us with counterarguments to the inflectional analysis.

Firstly, we have already seen that regular adverbial *-ly* (*nicely*, *suddenly*) is fully consistent in morphological terms with an analysis which treats such forms as regularly inflected adjectives. This includes the sporadic occurrence of semantically non-compositional items: *barely*, *hardly*, *scarcely*, *lately*, *presently*, *shortly*. Such behaviour is not unprecedented in the formally regular inflectional morphology.

Secondly, some adverbs are homonymous with adjectives: *early*, *fast* and others. Recall that we established the adjectival character of this set of 'adverbs' on the preceding pages. Under an inflectional analysis of *-ly* and the concomitant claim that 'adverbs' are not categorially distinct from adjectives, such forms are irregular, zero-inflected adjectives. They are on a par, for example, with nouns zero-inflected for plural such as *sheep*, *deer*, etc., as well as paradigmatically with the syncretism found, for example, among the past tense and past participle forms of many English verbs.

Thirdly, it is possible for adverbs to have adjectival counterparts without being morphologically related to those: *good* – *well*, and perhaps others. Recall that I observed the presence of a paradigmatic relationship between *good* and *well* in section 2.2. These two forms do not merely comprise an adjective from which unaccountably no adverb derives, plus an adverb not derived from an adjective. In the inflectional morphology such highly irregular cases are called suppletion: *went* is the classroom example. If the derivational morphology were to formally acknowledge such relationships in synchronic terms then it would have to regard, for example, *cat* – *feline* and *heart* – *cardiac* as instances of suppletion (Koshiishi 2011).

And fourthly, some adverbs lack both *-ly* and an adjectival counterpart, for example *soon*, *seldom*, *tonight* (Payne *et al.* 2010: 38). Their adjectival character, too, has already been established. Inflectionally such forms are comparable to nouns such as *cattle*: uninflected plurals which have no singular equivalent. In the present analysis, where an 'adverb' is an adjective with a specific modifier function (and distribution), such forms are simply adjectives with an irregular (defective) distribution.

Payne *et al.* (2010: 69ff.) note that most of the most frequent adverbs are not formed with *-ly*; *really* is the only de-adjectival adverb among the twenty most frequent adverbs. This observation figures in their defence of the integrity of the category Adverb. But again the high frequency of uninflected forms acting as adverbs is unsurprising: frequency patterns in the distribution of irregularity elsewhere in the inflectional system are the same. In the present analysis, the subclass of *-ly* adverbs is regular and productive, while uninflected adverbs constitute a closed set of highly frequent but formally irregular items. Bybee (1985) has shown that, for example, in the verbal inflectional system, members of the irregular ('strong') subclass are overwhelmingly frequent compared to the regular verbs, which is exactly why such verbs continue to block the regular inflection (*sang* vs **singed*) and thereby to survive as irregular verbs.⁵

4 Phonological aspects of the inflection-like behaviour of adverbial *-ly*

I deal in this section with two further aspects of the behaviour of adverbial *-ly*, both of which are morphophonological, and both of which I tentatively, and informally, link with the inflectional nature of adverbial *-ly* established on the preceding pages.

4.1 Degemination

Unlike for example *-less* or *-like* or indeed any consonant-initial derivational English suffix, adverb-forming *-ly* is in many cases subject to degemination when it attaches to bases ending in /l/; see (9a) below. Where that /l/ is itself part of a suffix, permanent fusion of the suffix sequence will result, as with *-al* and *-able/-ible* in (9b). Some examples of retained geminates are given in (9c).

- | | | | |
|---------------|-------------|------------|------------|
| (9) (a) fully | (b) tidally | admirably | (c) vilely |
| really | nocturnally | remarkably | malely |
| idly | formally | ostensibly | stalely |
| ably | morally | terribly | coolly |
| amply | mortally | visibly | |

Clearly it cannot be said that *-ly* always triggers degemination; but when it does, the degeminated form is lexicalised to the point of possibly being reflected in the spelling. Diachronically this phenomenon may be driven by frequency – in (9b) perhaps by the frequency of the suffix sequence rather than by that of the whole lexeme – but it is nevertheless notable that no other consonant-initial suffix seems to either degeminate or to lexicalise degemination as readily as adverbial *-ly* does:

⁵ Moreover, Payne *et al.*'s frequency observation may be countered by Schmid's (2011: 179), whereby adverbial *-ly* is by far the most frequent derivational (in his view) suffix in English.

- (10) (a) soulless (b) keenness
 guileless meanness
 wheelless brownness
 bottleless divineness

In an attempt to account for this behaviour in formal terms, one might invoke the phonological word ('pword'), in the sense set out by Wiese (1996: 65ff.), Hall (1999) and others. For reasons to do, for example, with syllabification, English prefixes and consonant-initial syllabic suffixes, but not vowel-initial suffixes, are regarded as pwords separate from their bases. Pwords are held to be the domains of phonotactic and other generalisations (Booij 1999). If we accept such a role of the pword in the phonology, then geminates can only occur across pword boundaries, as in (9c) and (10), as well as in prefixed forms such as *unnatural*, etc. English does not have geminate consonants in other contexts. *Fully* and *woolly* rhyme, despite the latter containing the derivational suffix *-y*, not *-ly*. Degemination as in *fully* therefore effectively reduces *-ly* phonologically to /ɪ/ so that the suffix does not have pword status in the examples in (9a, b), having lost that status diachronically in these forms.

Why should *-ly* tend to lose its pword status when other consonant-initial suffixes so stubbornly retain it? One might suggest that this is again driven by the nature of the inflectional system. Adverbial *-ly* is the only inflectional suffix of English to qualify for pword status: no others comprise consonant-initial syllables (and, of course, English has no inflectional prefixes). The tendency of *-ly* to lose its pword status through degemination is, then, at least consistent with its inflectional status. It would be inconsistent with derivational status. We would not therefore expect degemination to occur systematically with specific affixes in the derivational morphology.

4.2 Haplology avoidance

Adverbial *-ly* does not attach to bases ending in *-ly*. This is so both after adjective-forming *-ly* (**manlily*, **neighbourlily*, **dailily*, **nightlily*) as well as in cases where the base-final *-ly* is not suffixal: **oilily*, **sillily*, **chillily*, **wiggily* are ill-formed, or at least dubious. Again, such behaviour is not found elsewhere in the derivational morphology: there does not seem to be any such constraint preventing, for example, agent-forming *-er* from attaching to verbal bases such as *stammer*, *stutter*, *titter*, *shudder*, etc. Similarly, *heinousness* is well-formed. One phenomenon of slight resemblance in the derivational morphology is the *-al/-ar* allomorphy, where the latter attaches to bases ending in /ɪ/ and the former elsewhere: *stellar*, *velar*, *avuncular* vs *autumnal*, *accidental*, *floral*. But that resemblance is not strong.

It may be argued that adverbial *-ly* can be dropped while *-er* and *-ness* cannot be because, unlike those, *-ly* is semantically empty, as we saw above, so that uninflected *daily* can serve as both adjective and adverb. But if that were the case then *heinousness* should simply be ill-formed: we cannot expect in such a case unsuffixed *heinous* to be an abstract noun as well as an adjective. Given that *heinousness* is not ill-formed, the semantic emptiness of *-ly* is not what facilitates its avoidance of haplology.

There is again an interesting parallel to the haplology avoidance of adverbial *-ly* elsewhere in the inflectional morphology. Consider the following possessive forms:⁶

- | | | | |
|----------|--------------------|-----|----------------------|
| (11) (a) | *Mr Cook' house | (b) | Mr Jones' house |
| | Mr Cook's house | | Mr Jones's house |
| (c) | *the Cook' house | (d) | the Jones' house |
| | the Cooks' house | | the Jones's house |
| | *the Cooks's house | | the Joneses' house |
| | | | *the Joneses's house |

Haplology avoidance is evident in (11b), where the possessive *-s* is optional after */s/*, as well as throughout (11d), where either plural or possessive *-s*, but not both, can follow a base-final */s/*: no optionality here. In (11c), **Cooks's* shows that plural and possessive *-s* cannot occur in sequence, and the same is true for **Joneses's* in (11d). Note that the pattern in (11) is not in its entirety a matter of 'repeated morphs' (Menn & MacWhinney 1984): non-suffixal final */s/* plays at least an optional part in haplology avoidance, just as we observed in the case of stem-final (non-suffixal) *-ly*. This is, then, another aspect of the behaviour of *-ly* which is also found elsewhere in the inflectional morphology but not in the derivational morphology – too weak perhaps to count as supporting evidence for the inflectional analysis of *-ly*, and certainly not formally linked to the inflectional system, but of interest (and, like the degemination facts presented in section 4.1 above, awaiting further investigation) nonetheless.

5 Conclusion: remarks on the syntax of 'adverbs'

I noted initially that much of the argumentation in favour of an analysis whereby in English, adverbs and adjectives form a single lexical category has been conducted on syntactic grounds rather than – as I have done in this article – on morphological grounds based on the central claim that adverbial *-ly* is inflectional. I will first address a possible syntactic counterargument to that analysis before turning to the two syntactic arguments which have encouraged the single-category analysis.

It might be argued that the absorption of adverbs into the category Adjective might result in the loss of syntactic generalisations about the behaviour of that category. For example, it might be said that generalisations about the distribution of adjectives may be lost when we adopt a number of adverbs into the Adjective category whose forms or distributions are in some way irregular: *fast* is homonymous with a traditional adjective; *soon* is adverb only, etc. This means that a number of adjectives or adjective forms in the new, single-category sense have non-default distributions, the default distribution being roughly that adjectives occur as predicates, as pre-modifiers of nouns, and (inflected with *-ly*) as modifiers elsewhere. But the heterogeneity found above in the behaviour of adverbs is paralleled closely by heterogeneity already present within the traditional category Adjective: some members of this category cannot be predicates

⁶ I am grateful to Greg Stump for bringing these forms to my attention.

– e.g. *drunken*, *sheer* and some other isolated lexemes, and more generally associative adjectives such as *vernal*, *phocine*, *medical*, *neighbourly* (see Leitzke 1989; Ferris 1993; Giegerich 2005). Others cannot be pre-modifiers – *ablaze*, *asleep*, etc. – while others still may be post-modifiers to nouns, semantically distinct from their pre-modifying counterparts: *the concerned students* vs *the students concerned*. Collapsing the two traditional categories into one clearly does not create distributional heterogeneity where previously there was none. Indeed, the opposite may be argued to be true, as we shall see.

The first syntactic argument in favour of the single-category claim is that adjectives and adverbs take the same modifiers, namely degree as well as non-degree ‘adverbs’ (the former, like for example associative adjectives, largely resistant to modification): *very nice* – *very nicely* – *more nicely*, *surprisingly good* – *surprisingly well*, *surprisingly soon*, etc. (Emonds 1976; Baker 2003) – an attractive distributional generalisation missed entirely in the traditional analysis, which would have to regard this pattern as coincidental.

The second syntactic argument in favour of the single-category claim is the (near) complementary distribution of adjectives and adverbs (Lyons 1966; Radford 1988 and others). Basically, adjectives can modify nouns (and be predicates) while adverbs can modify everything else. Both the facts of the complementary-distribution claim and its relevance regarding the single-category claim have been challenged by Payne *et al.* (2010).

Payne *et al.* argue that adjectives and adverbs can occur in parallel distribution in two contexts. The first such context is that of pre-modifier of adjectives in cases such as *mad keen* vs *madly keen*, as in (8) above. I argued in section 3.1 that such pairs of forms are not in fact minimal pairs. *Mad keen* is a compound adjective while *madly keen* is an adjective phrase. This is therefore not parallel distribution.

The second context is that of post-modifier in the noun phrase, where Payne *et al.* (2010) cite a number of compelling and previously unnoticed examples of the occurrence of adverbs. Among them is the following minimal pair, which indeed falsifies the claim whereby English adjectives and adverbs are in absolutely complementary distribution (Payne *et al.* 2010: 52):

- (12) shortages *both nationally and internationally* of these metals
 shortages *both national and international* of these metals

But then they proceed to argue that the distribution of adjectives and adverbs, complementary or not, has no bearing on the single-category claim at any rate (Payne *et al.* 2010: 60f.), because all major categories are by and large in complementary distribution. This, too, is of course correct.

Let us, however, consider in more general terms what complementary distribution actually tells us about the putative categorial sameness of entities so distributed. Does complementary distribution, for example, prove the allophonic status and thereby the phonemic sameness of two phones? It does not. In English, [h] and [ŋ] are in essentially the same complementary distribution as, for example, ‘clear’ [l] and ‘dark’ [ɫ]. Unlike

those, however, [h] and [ŋ] fail to meet the condition whereby the allophones of a given phoneme must be phonetically similar. Therefore they represent separate phonemes while [l] and [ɫ] are allophones of the same phoneme. So, clearly, two entities in complementary distribution may be of the same category only if they are sufficiently similar in nature to warrant the hypothesis of sameness in the first place.

In the case of adjectives and adverbs, the similarity criterion is amply met. They share across their near-complementary distribution their function as modifiers; they are in turn modified by members of the same category; and most importantly, as I have shown on the preceding pages, adjectives and adverbs are morphologically the same. There is merely the problem of (12) above.

Does parallel distribution prove categorial distinctness? Again, it does not. In English, utterance-final stops may or may not be released; and given that no contrastive function is associated with this parallel distribution, a pair of stops phonetically distinct in terms of their release only is not categorially, i.e. phonemically, distinct. The parallel distribution exemplified in (12) above is of the same nature. This is simply a slight overlap in the distribution of adjectives and adverbs, an instance of parallel distribution which has no contrastive function in the language: it is free variation. So, albeit in a way they did not foresee, Payne *et al.* (2010) were correct in saying that this distribution has no bearing on the single-category claim, which I believe I have sufficiently substantiated in this article.

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